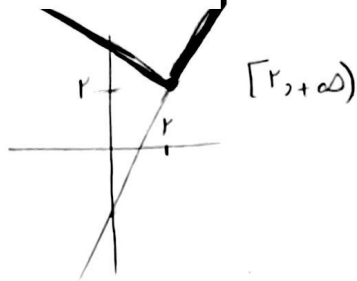
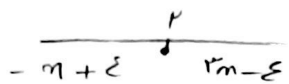
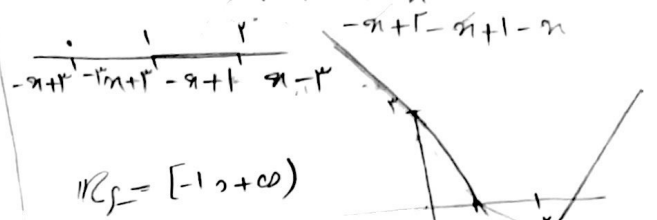


$$الف) y = x + |x - m - \varepsilon|$$



$$ب) y = |x - r| + |m - 1| - |m|$$

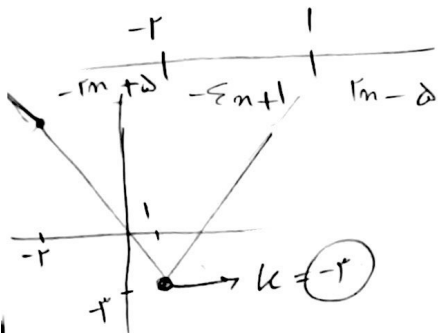


فاصله بین دو خط مستقیم

$$۱- فاصله ی دو خط مستقیم:  $\pm |x - r| - |x + r| = k$$$

$$2x - r - x - r \rightarrow x - 2r$$

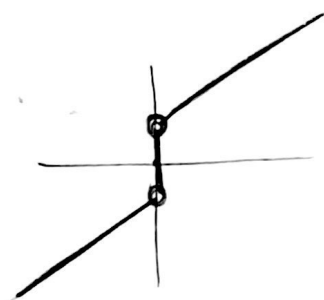
$$-x + r - x + r = -2x + 2r$$



$$الف) x + \frac{x}{|x|}$$

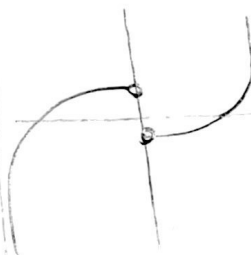
$$\frac{0}{x-1} \leq \frac{0}{x+1}$$

$$0 \rightarrow 0 =$$



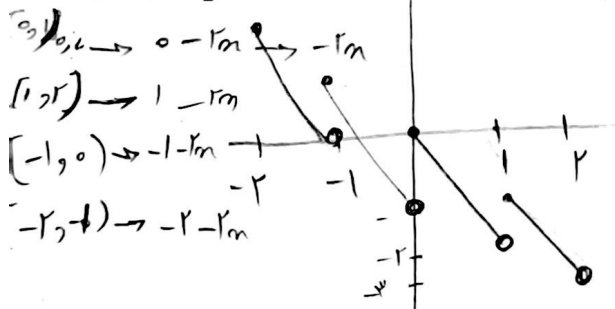
$$ب) x|x| - \frac{x}{|x|}$$

$$\frac{0}{-x^2+1} \leq \frac{0}{x^2-1}$$



۲- نمودار روابط

$$الف) [x] - \lfloor x \rfloor$$



$$ب) [x] |x|$$

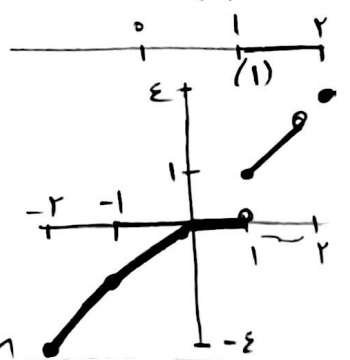
$$[0,1) \rightarrow 0 \times x \rightarrow 0$$

$$[1,2) \rightarrow 1 \times x \rightarrow x$$

$$2 \rightarrow 2 \times 2 = 4$$

$$[-1,0) \rightarrow -1 \times -x \rightarrow x$$

$$[-2,-1) \rightarrow -2 \times -x \rightarrow 2x$$



$$الف) y = \lfloor x \rfloor - [x]$$

$$x - [x] \rightarrow [0,1) \rightarrow \mathbb{R}_f$$

$$ب) \varepsilon x - \varepsilon [x]$$

$$\varepsilon(x - [x]) \rightarrow \varepsilon([0,1)) \rightarrow \mathbb{R}_f = [0, \varepsilon)$$

$$۱) y = \lfloor x \rfloor - \lceil x \rceil \rightarrow \mathbb{R}_f = (-1, 0]$$

$$ب) y = x - \frac{x}{\omega} \rightarrow \div \omega \Rightarrow$$

$$\frac{x}{\omega} - \left\lfloor \frac{x}{\omega} \right\rfloor \rightarrow (0,1) \rightarrow \mathbb{R}_f = [0, \omega)$$

$$y = \frac{r \sin \theta + r \cos \theta}{t}$$

$$\sqrt{11} \leq t \leq \sqrt{11} \rightarrow \mathcal{R}_f = [-\sqrt{11}, \sqrt{11}] \quad \mathcal{R}_c = [-2, 2]$$

$$-\sqrt{2} \leq t \leq \sqrt{2} \rightarrow y = \frac{r \sin \theta - r \cos \theta}{t}$$

$$y = \frac{r \sin \theta + r \cos \theta}{t}$$

$$\sqrt{11} \leq t \leq \sqrt{11} \rightarrow -2 \leq t \leq 2 \rightarrow -4 \leq [t] \leq 2$$

$$\mathcal{R}_f = [-4, 2]$$

$$y = \frac{r \cos \theta - r \sin \theta}{t}$$

$$-\sqrt{2} \leq t \leq \sqrt{2} \rightarrow$$

$$\mathcal{R}_f = [0, \sqrt{2}]$$

$$y = \sin^2 \theta + \sin \theta + r$$

$$\text{ext min} \rightarrow \frac{-1}{r} \rightarrow \frac{1}{\varepsilon} - \frac{1}{r} + r \rightarrow \mathcal{R}_f = \left[ \frac{1}{\varepsilon}, \varepsilon \right]$$

$$(1) \rightarrow 1 + 1 + r \rightarrow \varepsilon$$

$$(-1) \rightarrow 1 - 1 + r \rightarrow r$$

$$y = \sin^2 \theta + \varepsilon \cos^2 \theta$$

$$\sin^2 + \cos^2 \rightarrow 1 + r \cos^2$$

$$r \cos^2 \rightarrow \sin^2 + \cos^2 \rightarrow \mathcal{R}_f = [1, \varepsilon]$$

$$[0, r]$$

$$(\sin^2 + \cos^2)(\sin^2 + \cos^2 + r \sin^2 \cos^2)$$

$$1 - r \sin^2 \cos^2 \Rightarrow 1 - r \cos^2 \sin^2$$

$$y = \sin^2 \theta + \cos^2 \theta$$

$$\mathcal{R}_f = \left[ \frac{1}{\varepsilon}, \varepsilon \right]$$

$$\sin^2 \theta = \frac{1 - \cos(2\theta)}{2} \rightarrow \frac{(1 - \cos(2\theta))}{2} + \frac{(1 + \cos(2\theta))}{2} \rightarrow \frac{1}{2} \cos(2\theta) - \frac{1}{2} \cos(2\theta) + \frac{1}{2} \rightarrow \frac{1}{2}$$

$$n + \varepsilon$$

$$\frac{r \sin^2 \theta + r \cos^2 \theta - \varepsilon}{r \sin^2 \theta + r \cos^2 \theta} \rightarrow \frac{n + \varepsilon}{n - 1}$$

$$-n - \varepsilon \quad -n - 1 = -9$$

$$\mathcal{R}_f = [-9]$$

$$-1 \quad r \sin^2 \theta + r \sin \theta + r$$

$$\frac{-b}{2a} = \frac{-r}{\varepsilon} \rightarrow \frac{1}{\varepsilon} + \frac{-r}{\varepsilon} + \frac{1}{\varepsilon} =$$

$$\left( \frac{1}{\varepsilon} \right)$$

$$\mathcal{R}_f = [1, \varepsilon]$$

$$(-1) \rightarrow r - r + r \rightarrow r$$

$$(1) \rightarrow r + r + r \rightarrow 3r$$

$$y = \frac{r \cot \theta}{1 + \cot^2 \theta}$$

$$\frac{r \cos}{\sin} \rightarrow r \sin \cos \Rightarrow \sin^2 \theta$$

$$\mathcal{R}_f = [-1, 1]$$

$$y = \sin^2 \theta + \cos^2 \theta$$

$$\mathcal{R}_f = \left[ \frac{1}{\varepsilon}, \varepsilon \right]$$

$$\mathcal{R}_f = \{0\}$$

$$y = \frac{r^2 - 1}{n - 1}$$

$$n^2 + n + 1$$

$$\mathcal{R}_f = \{r\}$$

$$\mathcal{R}_f = \{r\}$$